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AMSAT NEWS SERVICE
ANS-137

The AMSAT News Service bulletins are a free, weekly news and information service of AMSAT North America, The Radio Amateur Satellite Corporation. ANS publishes news related to Amateur Radio in Space including reports on the activities of a worldwide group of Amateur Radio operators who share an active interest in designing, building, launching and communicating through analog and digital Amateur Radio satellites.

The news feed on http://www.amsat.org publishes news of Amateur Radio in Space as soon as our volunteers can post it.

Please send any amateur satellite news or reports to:
ans-editor at amsat.org.

In this edition:

* Fox-1 Development, Launch, and Frequency Coordination Status at Dayton
* AMSAT FieldOps Team Fox-1 Operating Guide is Available
* US Naval Academy CubeSat Launch to Include Next APRS Satellite
* Iowa CubeSat students get ham radio licenses
* Extreme DX satellite contact between UK and Texas
* International Space Station Partners Adjust Spacecraft Schedule
* AMSAT Events
* ARISS News
* Satellite Shorts From All Over

SB SAT @ AMSAT $ANS-137.01
ANS-137 AMSAT News Service Weekly Bulletins

AMSAT News Service Bulletin 137.01
 >From AMSAT HQ KENSINGTON, MD.
DATE May 17, 2015
To All RADIO AMATEURS
BID: $ANS-137.01

Fox-1 Development, Launch, and Frequency Coordination Status at Dayton
AMSAT Dayton Hamvention Annoucements (Saved)

During the AMSAT Forum at the Dayton Hamvention, AMSAT Vice President Operations, Drew Glasbrenner, KO4MA, and AMSAT Vice President – Engineering Jerry Buxton, N0JY, provided more information about the Fox-1 satellites under development. Buxton, N0JY, says Fox-1A has passed all environmental testing and is integrated into the P-POD deployment canister. "The 'remove before flight pin' has been pulled, the doors closed on the P-POD, and everything is aboard the shipping container now en route to Vandenberg Air Force Base in California

for launch", said Buxton.

Previously Buxton had announced plans to incorporate an L band receiver in Fox-
1C and Fox-1D. The addition will allow ground commanded selection of the U/v (normal Fox-1 bands) or the new L/v 1.2 GHz (23 cm) mode. Both bands will operate as FM single channel.
http://www.amsat.org/?p=4000

During the satellite operations segment of the AMSAT Forum Glasbrenner provided the details of the uplink and downlink frequencies for the Fox-1 FM cubesat fleet.

Fox-1 Frequencies

	Uplink FM (67 Hz tone)	Downlink FM
Fox-1A	435.180 MHz	145.980 MHz
RadFxSat/Fox-1B*	435.250 MHz	145.960 MHz
Fox-1C*	435.300 MHz	145.920 MHz
	1267.300 MHz **	145.920 MHz
Fox-1D*	435.350 MHz	145.880 MHz
	1267.350 MHz **	145.880 MHz

* Pending IARU Coordination, If needed, changes will be announced
** U/v and L/v operations switchable by command station,
not operational simultaneously

According to Buxton, the team is planning to have an affordable L band uplink
ground station available to amateurs by the time Fox-1C is on orbit.

+ Fox-1A will launch on a NASA ELaNa flight scheduled during the third quarter, 2015 from Vandenberg AFB. Fox-1A is a passenger aboard this launch driven by the schedule of the primary payload. When updates are available they will be announced via the ANS and in the AMSAT Journal.

+ Fox-1B will fly with the Vanderbilt University radiation experiments expected in 2016.

+ Fox-1C will launch on Spaceflight’s maiden mission of the SHERPA multi-cubesat deployer on a SpaceX Falcon 9 flight planned for late 2015.

+ Fox-1D is a flight spare for Fox-1C. If not needed as a spare it will fly with the University of Iowa HERCI radiation mapping experiment.

+ Fox-1E “Evolution” will carry a Mode J linear transponder. The transponder is planned to be 30 kHz wide and will also have a 1200 bps BPSK telemetry beacon. Launch opportunities are being developed, to be announced at a later date.

AMSAT has an immediate need to raise funds to cover both the launch contract and additional materials for construction and testing for Fox-1C. Please help
us to continue to keep amateur radio in space. Donations may be made via the:

+ Paypal and credit card payment on the AMSAT website at

http://www.amsat.org

+ Donation link in the AMSAT store:
http://store.amsat.org/catalog/

+ Call the AMSAT office at (888) 322-6728

[ANS thanks the AMSAT Engineering and AMSAT Operations Teams for the above information]

AMSAT FieldOps Team Fox-1 Operating Guide is Available

AMSAT's Director of Field Operations, Patrick Stoddard, WD9EWK, invites you to view and download the "Fox-1 Operating Guide" which was released at the 2015 Dayton Hamvention. This color PDF file is designed to print double-sided.
Two different resolution versions are available:

+ Low resolution PDF suitable for on-screen display (~400 KB size)

+ High resolution, press quality PDF for hard-copy printing (~2 MB size)

To access these files visit the AMSAT web and follow the path:

http://www.amsat.org --> Satellite Info --> Station and Operating Hints.

The direct link is
http://www.amsat.org/?page_id=2144
where you'll find the link to the Guide.

[ANS thanks the AMSAT FieldOps Team for the above information]

US Naval Academy CubeSat Launch to Include Next APRS Satellite

Sometime on or about May 20, the next US Naval Academy satellites and Brno University PSK31 transponders head into space from Cape Canaveral on an Atlas 5
launcher and into an approximately 50° orbit. The launch will include the Psat
APRS satellite – a pair of identical 1.5 U cubesats (A and B) – as well as the
BRICsat and USS Langley (Unix Space Server Langley) nanosatellites.

“Psat is a Naval Academy student satellite project named in honor of one of
our graduates, Bradford Parkinson, of GPS fame, which contains an APRS transponder for relaying remote telemetry, sensor, and user data from remote users and Amateur Radio environmental experiments or other data sources back to
Amateur Radio experimenters via a global network of Internet-linked ground stations,” explained APRS developer Bob Bruninga, WB4APR. In addition to the data transponder, a secondary Brno University transponder will support

multi-
user PSK31 text messaging. The APRS downlink will be 145.825 MHz (1200 baud AX.25 APRS).

“We welcome radio amateurs worldwide to tune into the downlinks and either IGate packets into the global APRS-IS system or to e-mail me,” Bruninga said.
“After launch, the next several orbits will be over USA and Europe.” Bruninga
said PSAT, including the PSK31 transponder, would not be available for use until all on-orbit checks are complete, a process he said could take “many, many days.” He also requested reports on any PSK31 (FM) heard on 435.350 MHz (the PSK31 uplink is 28.120 MHz).

The PSK31 multi-user FDMA transponder experiment on Psat and BRICsat is similar to the one on RAFT and PCSAT2. It will allow messaging among up to 30
modest ground stations simultaneously, Bruninga said.

Psat is one of five APRS-networked Amateur Radio satellites that will be in orbit during 2015, and all will appear on the live APRS downlink page. The others include PCsat-1, in orbit since 2001, QIKcom-1, set to launch in September, QIKcom-2, set to launch in December, and the ARISS packet radio system on board the International Space Station since 2007.

BRICsat will carry a PSK31 transponder with a 28.120 MHz uplink (2.5 kHz bandwidth) and a UHF FM downlink on 435.350 MHz. Gunter’s Space Page describes
USS Langley as “a proof-of-concept mission for providing global Internet access
via a nanosatellite constellation.” The satellite will act as a web server and
router in space, using Internet Protocol and Linux. Downlinks 437.475 MHz (9600
baud AX.25 packet telemetry) with uplink at 145.825 MHz. The IARU coordination
page said that while 28.120 MHz is not in the band plan as a satellite frequency, “the panel considered the motivation for this frequency as to give
lower class license holders in the US the opportunity to participate in the project.”

Bruninga said satellite experiments such as Psat “serve our educational and outreach goals for student projects encouraging young people to be interested
in Science, Technology, Engineering and Math.” He said he hopes other schools
will build either additional 145.825 MHz relay satellites or experimental sensors. “We hope that Psat will be the ‘egg’ in this chicken-egg conundrum,”
he added.

[ANS thanks ARRL Letter for 5/14/2015 for the above information]

Iowa CubeSat students get ham radio licenses

The University of Iowa reports its students will conduct a Van Allen radiation

belt experiment with the AMSAT Fox CubeSat

Thanks to a proposal by the UI Department of Physics and Astronomy, a group of senior electrical and computer engineering students will reenact James Van Allen's original experiment – this time with updated technology. Group members Kevin Klosterman KD9CPF, Bryan Senchuk KD9CPD, Tyler Dunkel KE0CHR, and Patrick Maloney KD9CPD took on the task as a part of their senior design project for the College of Engineering.

The group is trying to figure out how much energy is emanating from the Van Allen belts at a specific altitude. To measure that, they've built a radiation sensor attached to a circuit board that will launch into space on a small satellite. There, the radiation sensor will detect energetic particles from the Van Allen belts. The satellite will sit in a low-Earth orbit and circle the globe every 90 minutes, some data will be transmitted in real time, but all of it is stored for later transmission.

"I feel like we've learned something new every day," Klosterman says.

Not only did the students have to come up with a design concept, write the code to run the device, and build the circuit board by hand, they also had to learn and become licensed ham radio operators as well.

The satellite that the students are using to launch into space is part of the CubeSat program – an initiative supported by NASA to help give students more hands-on experience with space research – and is being constructed by AMSAT, the Radio Amateur Satellite Corporation, whose mission is to foster amateur radio participation in space technology. The data from a full day of operating the experiment will be transmitted from the satellite as it makes a single pass over the CubeSat tracking station on top of Van Allen Hall. The final result will be a full mapping of the radiation levels at a low Earth orbit.

It is hoped the Fox CubeSat with an FM voice transponder will be launched later this year.

Read the full story at http://now.uiowa.edu/2015/05/seniors-reenact-van-allen-radiation-belt-experiments

Each year 100's of students are introduced to amateur radio through University CubeSat satellite programs with many going on to get their amateur license.

AMSAT Fox
http://www.amsat.org/?page_id=1113

[ANS thanks AMSAT-NA and University of Iowa for the above information]

Extreme DX satellite contact between UK and Texas

On April 27, 2015 at 1901 GMT, Cuban radio amateur Hector Martinez W5CBF/CO6CBF achieved a 7537.8 km DX contact with UK amateur Peter Atkins G4DOL via FO-29.

Hector reported, "I am pleased to report that Peter G4DOL and I had another extreme QSO on FO-29. It is my furthest contact on the birds!

Back on October 2013, Peter and I had a very nice contact between EL92sd, Cienfuegos, Cuba and IO80so, Weymouth area, UK. It was a 7286 km contact and probably the first contact between UK and Cuba on FO-29!

Peter and I desired to try again on FO-29, this time between EM21hs, Texas, US and his habitual spot in IO80so. We were able to complete a very nice CW contact on the 92319 orbit of FO-29. Peter had just 0.1 degree as maxim elevation while I had 0.8 during the 80 seconds mutual window.

As before, Peter did all the hard work by driving until his habitual spot at a cliff-top and setting up his “portable satellite station” (19 elements Yagi for 435 MHz and 10 elements Yagi for 145 MHz both with horizontal polarization). FO-29 was sounding really good on these orbits. It was a solid 559 satellite contact, we were very impressed.

We made the calculations using our 10 digit grid squares at http://no.nonsense.ee/qth/map.html

The distance between the stations was 7537.799 km (4683.77 mi). To my knowledge, the longest distance achieved on FO-29 until now had been 7,533.685 km between Frank, K4FEG and Erich, DK1TB http://www.qrz.com/db/k4feg

UPDATE 2015-05-08: K4KEG has now revised his distance to 7,538.685 km. This puts his contact with DK1TB just ahead of that of W5CBF and G4DOL.

It appears that an even longer distance is achievable. It has been reported that FO-29 has a “theoretical maximum range” of 7502 km, but I guess that at least 7600km is doable. We will try to break our own record!

This contact was possible thanks to the great feature implemented on SatPC32 V12.8b. There is an option of seeing the frequency you are at the satellite receiver at any time during a pass. It allows the operators to tune the right frequencies and attempt a contact without having to search for each other.

Thanks very much to Peter for his persistence, effort and all the fun!"

2013 FO-29 satellite contact between Cuba and the UK
http://amsat-uk.org/2013/10/20/fo-29-satellite-contact-between-cuba-and-the-uk/

FO-29 information
http://amsat-uk.org/satellites/two-way-comms-satellites/fuji-oscar-29-jas-2/

[ANS thanks Hector, W5CBF/CO6CBF and AMSAT-UK for the above information]

International Space Station Partners Adjust Spacecraft Schedule

NASA and its international partners agreed Tuesday to set a new schedule for spacecraft traffic to and from the International Space Station.

The partner agencies agreed to adjust the schedule after hearing the Russian Federal Space Agency's (Roscosmos) preliminary findings on the recent loss of the Progress 59 cargo craft. The exact dates have not yet been established, but will be announced in the coming weeks. Roscosmos expects to provide an update about the Progress 59 investigation on Friday, May 22.

The return to Earth for NASA's Terry Virts, ESA (European Space Agency) astronaut Samantha Cristoforetti and Russian cosmonaut Anton Shkaplerov now is targeted for early June. NASA astronaut Scott Kelly and Russian cosmonauts Mikhail Kornienko and Gennady Padalka will remain aboard the station to begin Expedition 44.

The next Russian cargo craft, Progress 60, will launch in early July to deliver several tons of food, fuel and supplies. The space station has sufficient supplies to support crews until the fall of 2015.

The Soyuz spacecraft carrying Expedition 44’s Kjell Lindgren of NASA, Oleg Kononenko of Roscosmos, and Kimiya Yui of the Japan Aerospace Exploration Agency, will launch in late July from the Baikonur Cosmodrome in Kazakhstan.

The date of SpaceX’s seventh resupply flight under its commercial resupply services contract with NASA still is under review but remains targeted for no earlier than June 19. The mission will deliver to station additional supplies and research that improve life on Earth and drive progress toward future space exploration. It also will deliver the first of two international docking adapters, which will enable future commercial crew vehicles to dock to the orbiting laboratory.

Additional 2015 space station-related launch dates also are under review.

NASA will continue to update the launch schedule online at:
http://www.nasa.gov/launchschedule

For more information about the International Space Station, visit:
http://www.nasa.gov/station

[ANS thanks NASA for the above information]

AMSAT Events

Information about AMSAT activities at other important events around
the country. Examples of these events are radio club meetings where
AMSAT Area Coordinators give presentations, demonstrations of working
amateur satellites, and hamfests with an AMSAT presence (a table with
AMSAT literature and merchandise, sometimes also with presentations,
forums, and/or demonstrations).

*Friday, Saturday, and Sunday, May 15-17 2015, Dayton Hamvention in
Dayton OH (Hara Arena)

*Thursday, 21 May 2015 – International Microwave Symposium 2015 in
Phoenix AZ

*Saturday, 6 June 2015 – White Mountain Hamfest in Show Low AZ

*Friday and Saturday, 12-13 June 2015 – HAM-COM in Irving TX (west of
Dallas)

*Thursday, 9 July 2015 – presentation for the Escondido Amateur Radio
Society in Escondido CA

*Friday and Saturday, 7-8 August 2015 – Austin Summerfest in Austin TX

*Saturday and Sunday, 22-23 August 2015 – Boxboro Hamfest and ARRL
New England Convention in Boxborough MA

*Friday, Saturday, and Sunday, October 16-18 2015, AMSAT Symposium in
Dayton OH (Dayton Crown Plaza)

[ANS thanks AMSAT-NA for the above information]

ARISS News

Upcoming ARISS Contacts

It is unlikely that there will be any contacts with the Columbus module
station until after a crew change, which will probably occur in late June or
July.
Watch
http://www.ariss.org/upcoming-contacts.html
for information about upcoming contacts as they are scheduled.

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Latest ARISS News

* Gagarin from Outer Space: A contact was successful Thu 2015-05-07 at
08:30
UTC with Ryazan State Radio Technical University, Ryazan, Russia, direct via
RK3SWB. The ISS callsign was RSØISS, and the astronaut was Mikhail
Korniyenko,
RN3BF.

* A contact was successful Sat 2015-05-09 08:20 UTC between Kursk,
Russia, WWII
veterans, direct via TBD. The ISS callsign was RSØISS, and the astronaut was
Gennady Padalka, RN3DT.

* Contacts on Sat 2015-05-09 09:52:06 UTC 27 deg with Istituto Tecnico Industriale Statale “Enrico Fermi,” Lucca, Italy, direct via IQ5LU, and with Studi di Firenze – Dipartimento di Fisica e Astronomia, Sesto Fiorentino, Italy, direct via IQ5PO, were both successful. The ISS callsign was IRØISS, and
the astronaut was Samantha Cristoforetti IZØUDF, who answered 22 questions. There were several hundred in attendance at both locations, along with newspaper and TV media. The event was streamed live on the Web.

State Technical Industrial Institute is named for Enrico Fermi and is located
in Lucca, Northern Tuscany. Five year courses are offered in Mechanics, Electrotechnics, Electronics, Information, and Communication Tecnology with several laboratories. There are about 700 students, aged 15 through 19. The school had an Amateur Radio Club with the callsign IK5YOI (license expired).

[ANS thanks ARISS, and Charlie, AJ9N for the above information]

Satellite Shorts From All Over

* Reminder: Cambi-Hams DXpedition to Mull Island is Active May 15-21

The Cambi-Hams group is going to activate Mull, Inner Hebrides (IOSA NH15, SCOTIA CN10, WW Loc. IO76EJ) from May 15 to 21. They plan to be active on 80-
10m on SSB, CW, RTTY, and PSK; also on 6m, 4m, and 2m, and on satellites: AO-7
(Mode B), FO-29, SO-50, and AO-73. The group also hopes for short trips to Iona
(EU-008) and Treshnish Island (EU-108), see their website for updates on that.
QSL via ClubLog OQRS or via bureau.
http://dx.camb-hams.com/

Watch AMSAT's Upcoming Satellite Operations page for late breaking news about
DX and grid operations:
http://www.amsat.org/?page_id=3921

[ANS thanks the DXNL Newsletter 1936 for May 13, 2015 for the above information]

First all CW 73 on 73 Award

Paul Stoetzer, N8HM, reports,
"Congratulations to Hideo Kambayashi, JH3XCU, for working 73 different stations
on AO-73 since September 1, 2014. Notably, he is the first to work all 73 different stations using CW."

For more information on the award see
http://amsat-uk.org/funcube/73-on-73-award/

AO-73 was launched on November 21, 2013 and is the first spacecraft to have a
primary mission of educational outreach to schools and the smallest ever

satellite to carry a linear (SSB/CW) transponder for radio amateurs.

[ANS thanks AMSAT-UK for the above information]

New NASA Deputy Administrator is a Radio Ham

Prof. Dava Newman KB1HIK was sworn in as NASA Deputy Administrator on May 15 from her MIT office.

Her appointment had been confirmed by the U.S. Senate on April 27. NASA Administrator Charles Bolden (formerly KE4IQB) said, “I am delighted with the
Senate confirmation of Dr. Dava Newman to be the deputy administrator of NASA.
The strong bipartisan support Dr. Newman received in the Senate is a reflection
of her well-earned reputation and renown as a global leader in science and technology research and policy.”

Newman is a professor of aeronautics and astronautics and of engineering systems. On the MIT faculty since 1993, she directs the Institute’s Technology
and Policy Program and MIT Portugal Program, and is co-director of the Department of Aeronautics and Astronautics’ Man Vehicle Laboratory. She is a Harvard-MIT Division of Health Sciences and Technology faculty member, and a Margaret McVicar Faculty Fellow.

Her research has included modeling human performance in low and micro-gravity
conditions, examining the dynamics and control of astronaut motion, and the development of assisted walking devices for the physically handicapped. Perhaps
her most prominent project has been development of the BioSuit, a skintight spacesuit that would give astronauts unprecedented comfort and freedom in exploration of planetary surfaces and extra-vehicular activity.

After accepting the confirmation, Newman said, “It’s an enormous honor to serve at NASA in times when our country is extending humanity’s reach into space while strengthening American leadership here on Earth. I’m profoundly grateful to President Obama, the United States Senate, and Administrator Bolden
– along with everyone at MIT. I can’t wait to come aboard.”

http://amsat-uk.org/2015/05/16/new-nasa-deputy-administrator-is-a-radio-ham/

[ANS thanks AMSAT-UK for the above information]

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In addition to regular membership, AMSAT offers membership in the President's Club. Members of the President's Club, as sustaining donors to AMSAT Project Funds, will be eligible to receive addi-tional benefits. Application forms are available from the AMSAT Office.

Primary and secondary school students are eligible for membership at one-half the standard yearly rate. Post-secondary school students enrolled in at least half time status shall be eligible for the stu-dent rate for a maximum of 6 post-secondary years in this status.

Contact Martha at the AMSAT Office for additional student membership
information.

73,
This week's ANS Editor,
Joe Spier, K6WAO
k6wao at amsat dot org

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k6wao
Joe Spier
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